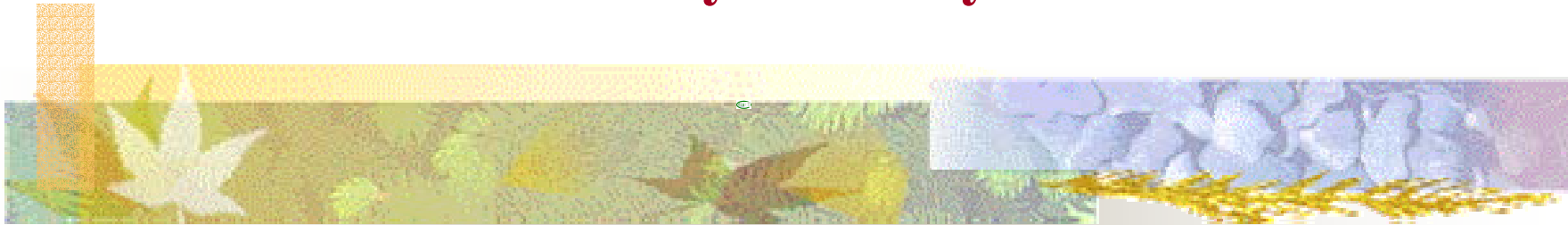




U.S. Forest Service

Forest Inventory & Analysis Overview



presented by

W. Brad Smith

Associate National Program Manager, FIA



Forest Inventory and Analysis

The Nation's Forest Census



Legislative mandate

“make and keep current a comprehensive inventory and analysis of the present and prospective conditions and requirements of the renewable resources of the forest and rangelands of the United States”

- 1928 McSweeney/McNary Act



Forest Inventory and Analysis

The Nation's Forest Census



FIA Program Perspectives

- *Only comprehensive forest inventory for each of the 50 States, Puerto Rico, and Trust Territories*
- *Switched from periodic State by State cycle in 1999 to annualized system operating in every State every year*
- *FIA budget has been less than 2% of Forest Service budget for 75 years*



Forest Inventory and Analysis

The Nation's Forest Census



A history of delivery since 1928

- 260+** STATE INVENTORIES
- 8** NATIONAL ASSESSMENTS
1953, 1963, 1970, 1977, 1987, 1992, 1997, 2002
- 3** NATIONAL OWNERSHIP STUDIES
1978, 1994, 2003 (in progress)
- 100's** PRIMARY MILL AND UTILIZATION STUDIES
- 2** SATELLITE FOREST COVER MAP
1993, 1997

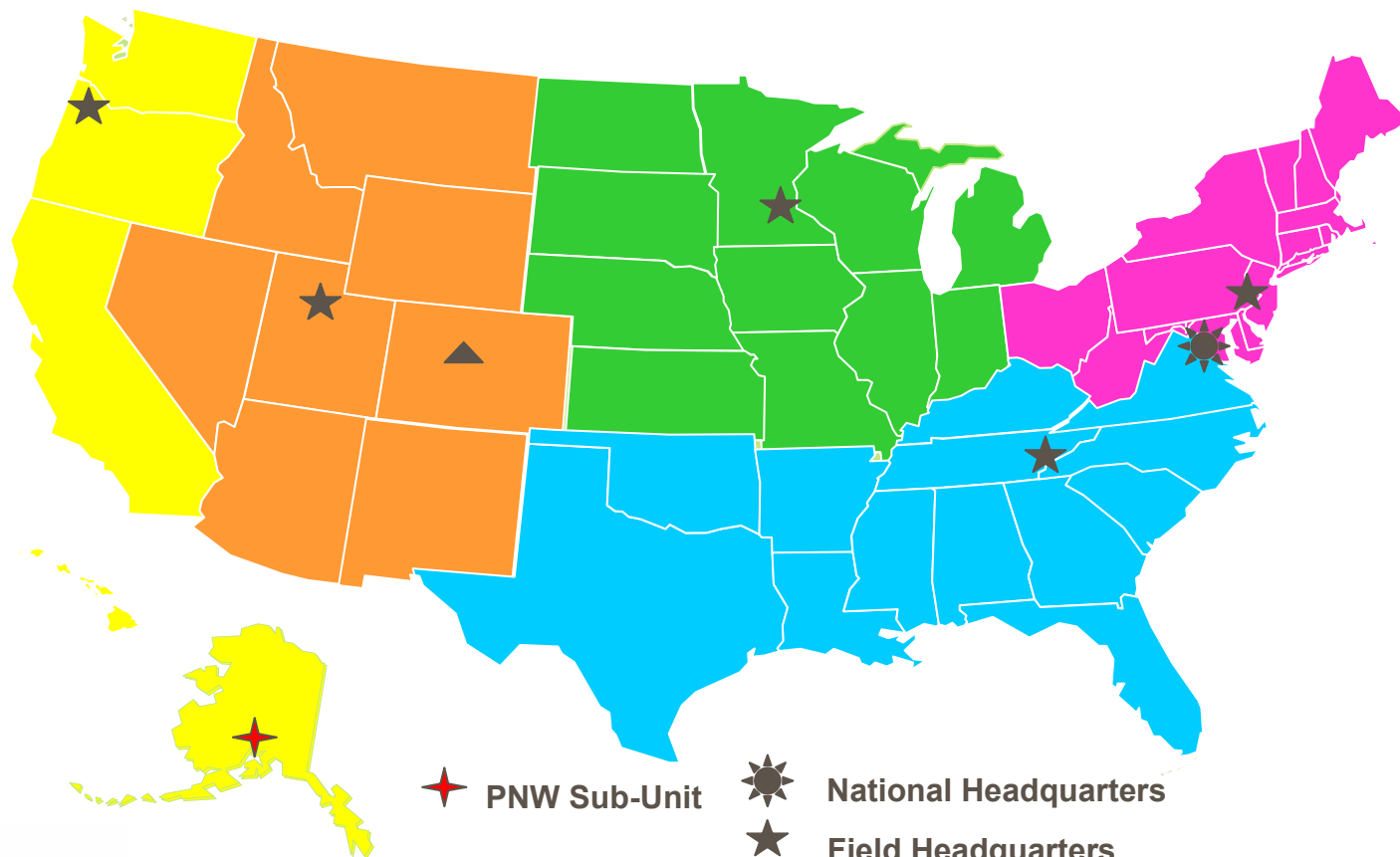


Forest Inventory and Analysis

The Nation's Forest Census



FIA Units



PNW Sub-Unit



National Headquarters



Field Headquarters



National Techniques Unit

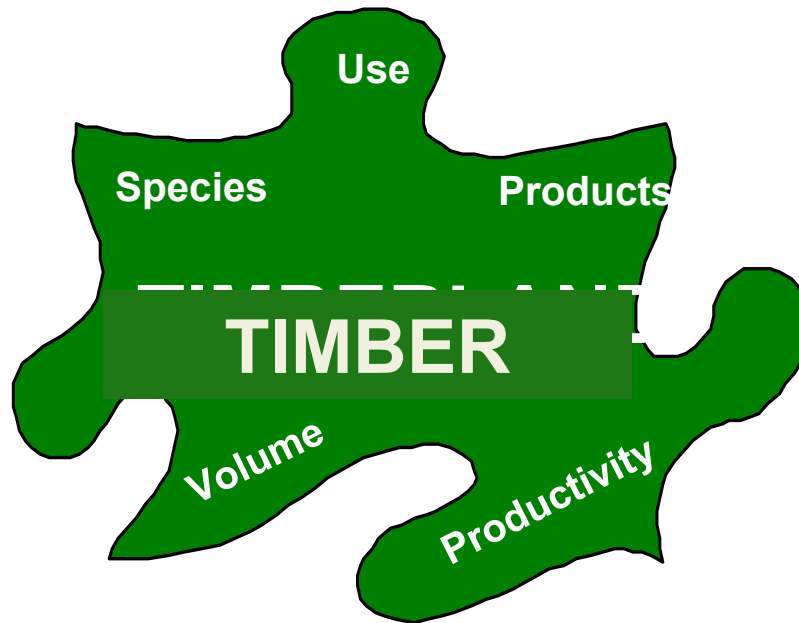


Forest Inventory and Analysis

The Nation's Forest Census



The old paradigm was simple
- *and less expensive*



**Monitor
timber
supplies**



Forest Inventory and Analysis
The Nation's Forest Census



Adapting to changing clients

Since 1980, FIA has over 400 publications dealing with nontimber topics including:

- Wildlife habitat
- Recreation
- Hydrology
- Urban issues
- Land use
- Forest Health
- Forest Ownership

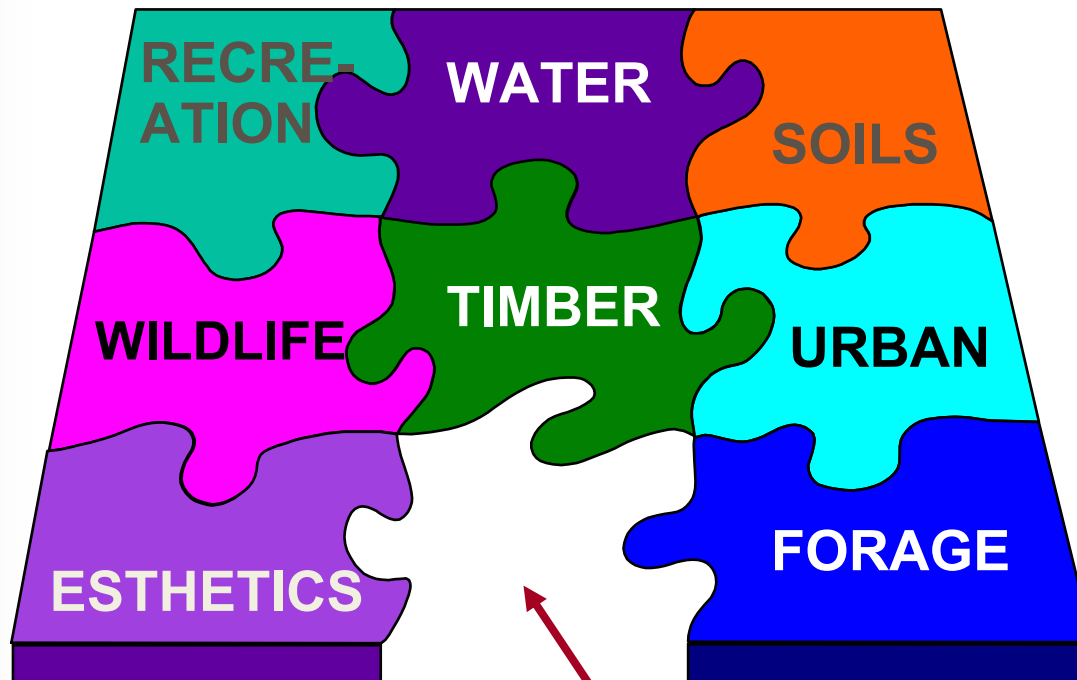


Forest Inventory and Analysis

The Nation's Forest Census



The new paradigm is more complex
- and more expensive



**Monitor
forest
ecosystems**

Reserved for future clients!



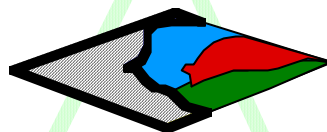
Forest Inventory and Analysis

The Nation's Forest Census



Integrated Monitoring Framework

**Ecosystem
Index Site**



**Permanent
20+ Ecosystem sites
throughout U.S.**

**Phase 3 (P3)
Forest Health**



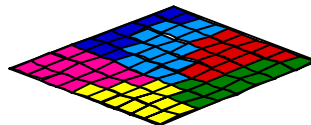
**Permanent
8,000+ forest plots
13 mile (22 km) grid**

**Phase 2 (P2)
Forest Inventory**



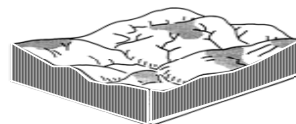
**Permanent
125,000+ forest plots
3 mile (5 km) grid**

**Phase 1 (P1)
Remote Sensing**



**Millions of
1 m – 1 km pixels**

GROUND



Forest Inventory and Analysis

The Nation's Forest Census



Accuracy by design

Area

+/- 3% per million acres

Volume

+/- 5% per billion cubic feet



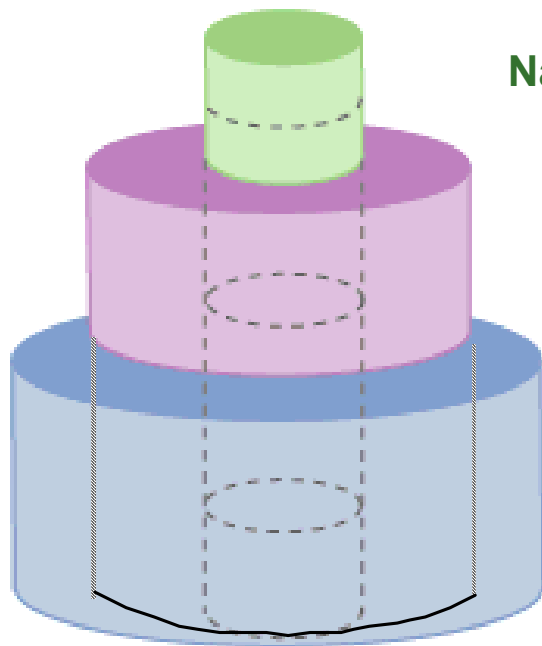
Forest Inventory and Analysis

The Nation's Forest Census

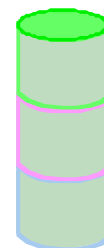


Core data layers- common protocols

Key to success



National Core Data



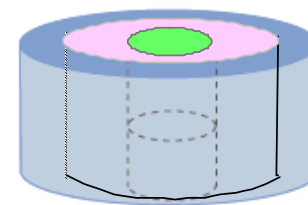
Free to all partners

Regional Core Data



**Requires
some
partner
financial
support**

Local Data



All partner cost



Forest Inventory and Analysis

The Nation's Forest Census



Federal land and FIA forest plots

Department	Land	Forest	FIA Forest plots
<i>Million acres</i>			
Agriculture	191.5	148.5	24,750
Interior*	431.6	96.2	16,033
Other	12.0	1.8	300
	635.1	246.5	41,083

** Nearly 6,000 on Park Service land.*



Forest Inventory and Analysis

The Nation's Forest Census



Strategic Planning is critical!

**FIA now operates under
a Strategic Plan and
management structure
approved by Congress**



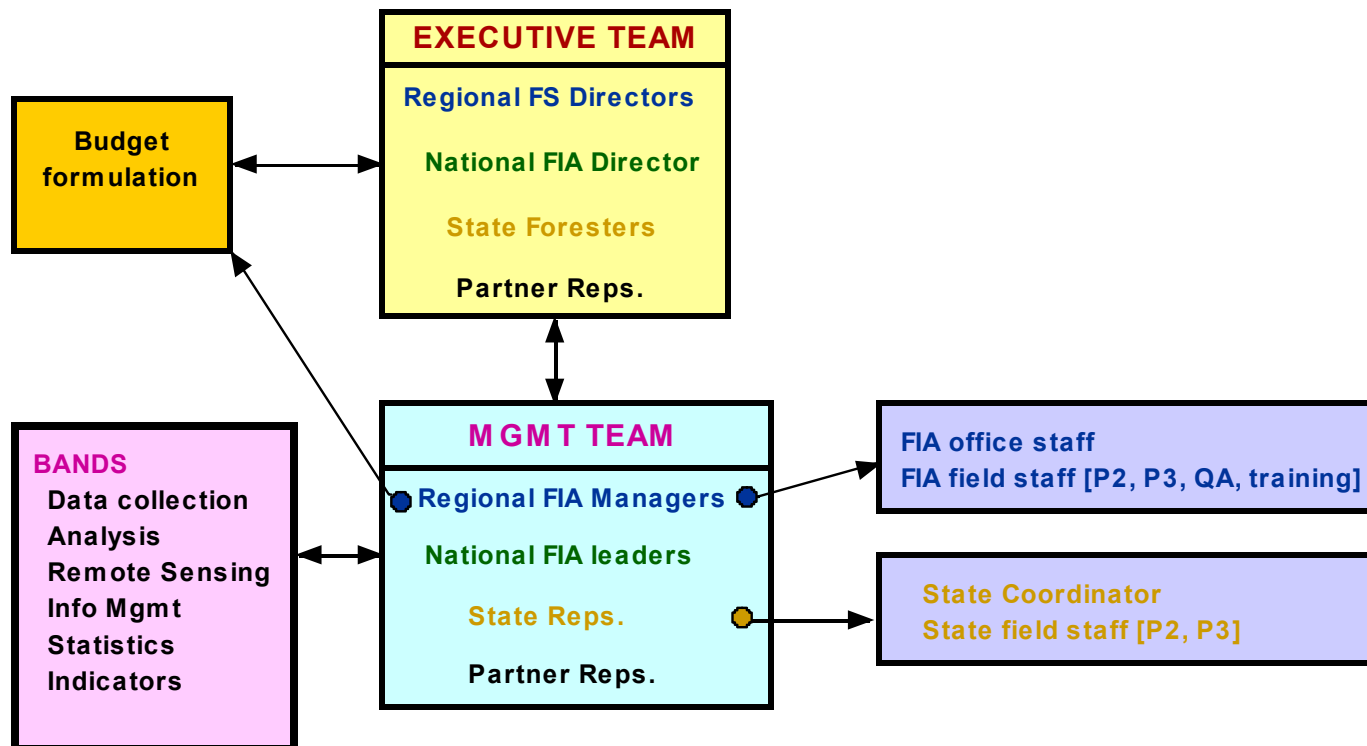
Forest Inventory and Analysis

The Nation's Forest Census



Management structure

includes financially participating partners by design



Forest Inventory and Analysis

The Nation's Forest Census



The Management Team is the heart and the technical Bands are the brain of FIA

- Data Acquisition
- Analysis
- Remote Sensing
- Statistics
- Information Management
- Health Indicator Advisors



Forest Inventory and Analysis

The Nation's Forest Census



Technical Bands are integral to program delivery and efficiency

They “create a structure and process which allows technical staff from FIA and its cooperators across the country to interact and assure documented, demonstrable consistency in the core FIA program and its deliverables.”



Forest Inventory and Analysis

The Nation's Forest Census



Mantra of the Bands...

- **Better**
- **Cheaper**
- **Faster**
- **More consistent**



Forest Inventory and Analysis

The Nation's Forest Census



FIA encourages User Groups and Partner participation

- User groups promote program ownership
 - *Users know what they need*
- Partners improve program efficiency
 - *by enhancing program funding*
 - *by creating useful value-added products*



Forest Inventory and Analysis

The Nation's Forest Census



Accountability is paramount

- *FIA provides an annual business report*
 - *What did the taxpayers get for their money?*
- *FIA encourages 'Blue Ribbon Panels'*
 - *Groups of experts that independently evaluate program goals, accomplishments, and future direction.*



Forest Inventory and Analysis

The Nation's Forest Census



Some brief notes on FIA implementation and products



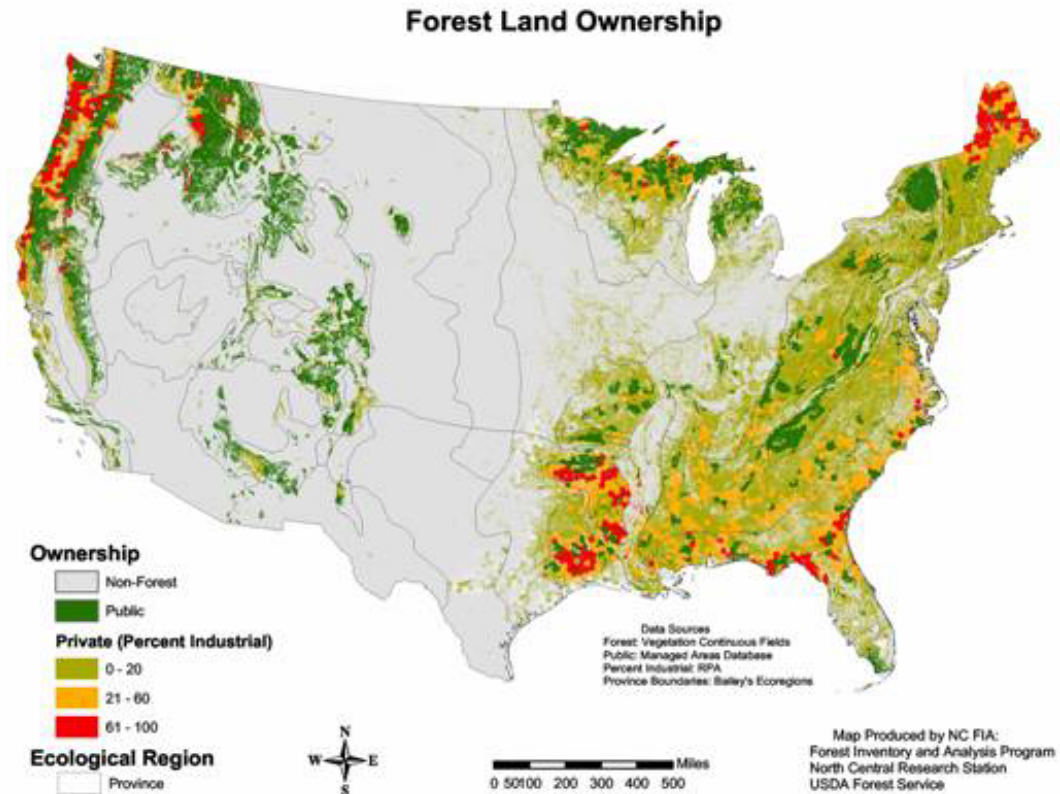
Forest Inventory and Analysis

The Nation's Forest Census



FIA is not just plots

FIA has annualized the private forest landowners study to assess the goals and objectives of America's 10 million private forest land owners



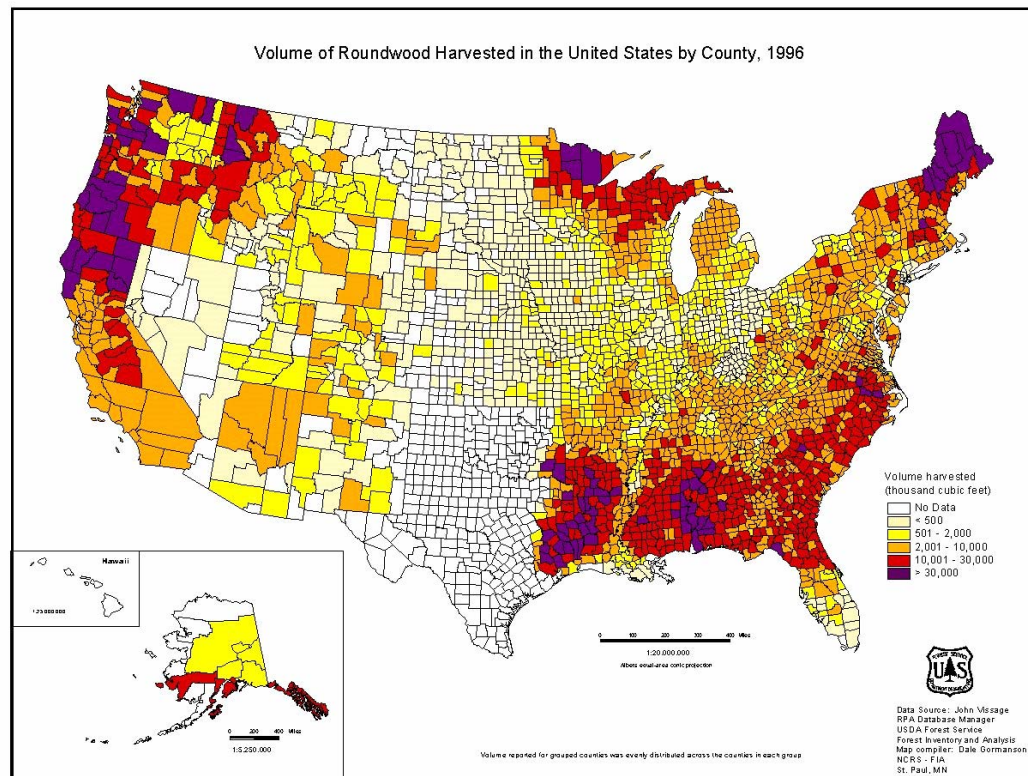
Forest Inventory and Analysis

The Nation's Forest Census



Timber Products Output

**FIA's
first and
still one
of the
most
popular
online
interact-
ive data
bases**



**FIA
surveys
all of the
Nation's
primary
wood-
using
mills
every 3-5
years**



Forest Inventory and Analysis

The Nation's Forest Census



Logging Utilization

As technology changes or new wood products are introduced, FIA goes out on active logging operations to monitor fiber utilization



Forest Inventory and Analysis

The Nation's Forest Census



DATA FUSION

providing the most significant added value

is the ability to integrate field data with remote sensing and other data to provide statistically reliable spatial products for user-defined analysis

If you remember only one thing... this is it

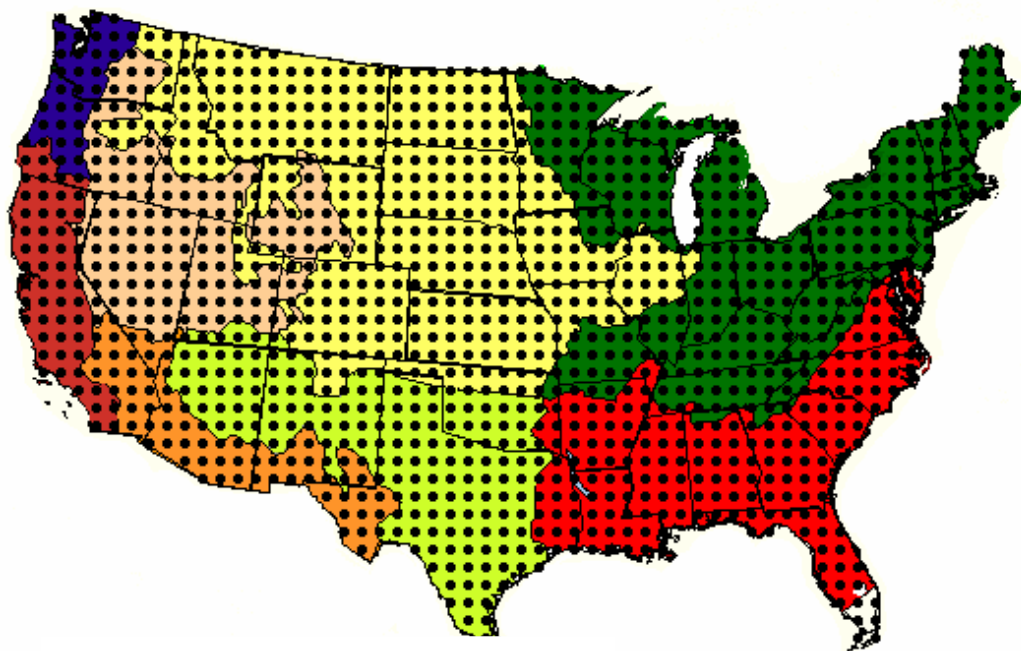


Forest Inventory and Analysis

The Nation's Forest Census



A design independent of stratification allows flexible issue analysis



Eco-zone overlay on the GRID

Other analysis layers

- Protected areas
- Watersheds
- Riparian zones
- **Rangelands**
- Fire areas
- Insect/disease outbreak areas



Forest Inventory and Analysis

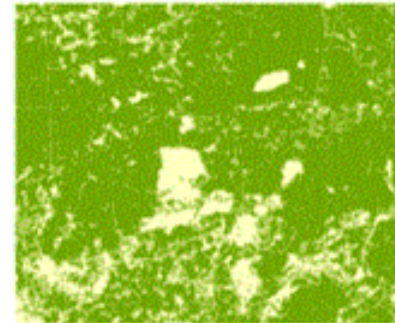
The Nation's Forest Census



EXAMPLE 1: Rapidly Classifying Satellite Imagery Using FIA Data and a Logistic Model

Problem: The National Land Cover Dataset (NLCD) takes approximately five years to complete, is only repeated every 10 years, and requires a host of ancillary data (e.g., elevation, soil, census, wetlands inventory, and various land cover datasets).

Solution: An alternative classification approach using a logistic regression model requires only Landsat Thematic Mapper imagery and FIA plot data, produces a forest/non-forest classification of a Landsat scene in approximately one day.



NLCD



Model

 Forest  Nonforest

A pixel-by-pixel comparison reveals excellent agreement between the two maps (about 92% match on 420 million pixels).

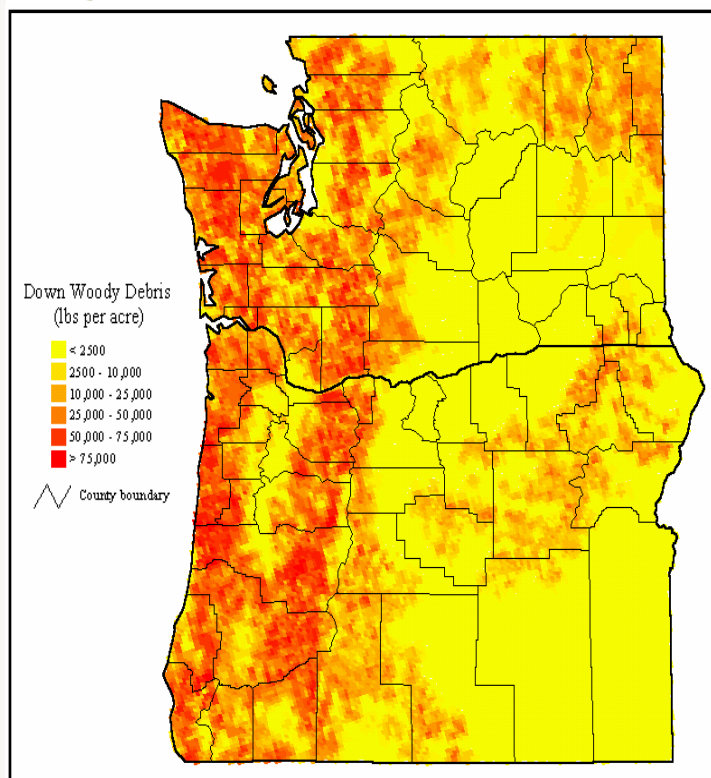


Forest Inventory and Analysis

The Nation's Forest Census



Example 2: Fuel Reduction Assessment



Identifying fuel reduction treatment opportunities by overlaying the Fire Regime and Condition Class with estimates of average biomass from FIA plots, and predicted yield from a silvicultural prescription designed to reduce overall biomass



Forest Inventory and Analysis

The Nation's Forest Census



If the FIA program had a mantra...

- *We are the Census of the Nation's forests*
 - *We are partners with the States and forest landowners as keepers of the nation's forest family album*
- *We do not deliver pretty pictures*
 - *We only deliver pretty, accurate pictures*
- *We never sacrifice quality for expediency*
 - *Disclosure of accuracy of all products is mandatory*
- *If it is not value-added, we don't do it*



Forest Inventory and Analysis

The Nation's Forest Census



Get more information

**Special FIA
issue of the
Journal of
Forestry,
December
1999**



Go to FIA web site:

www.fia.fs.fed.us



Forest Inventory and Analysis

The Nation's Forest Census



THANK YOU!!

- *FIA has been blessed with the respect and support of Congress, State, and other partners for over 75 years*
- *FIA works hard to earn that respect and support every day and is dedicated to making sure the taxpayers receive good value for their money*



Forest Inventory and Analysis

The Nation's Forest Census



Total FIA funding for 2002

Source	Amount <i>Million dollars</i>	Share <i>Percent</i>
FIA funds	41.9	65%
Federal partners	<u>14.0</u>	22%
Subtotal Core	55.9	87%
States, others	<u>8.6</u>	13%
Grand total	64.5	100%

Source: 2002 FIA Annual Business Summary.

35% of FIA support from outside FS Research!



Forest Inventory and Analysis

The Nation's Forest Census